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Address of the Society:

Int. Soc. History & Bibl. Herpetology
Box 2123,
SE-220 02 Lund, Sweden

www.t-ad.net/ishbh

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Consult the latest issue of *Bibliotheca Herpetologica* for article format. The Editor reserves the right to adjust style to maintain uniformity.

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Society News

The Herpetological Legacy of Linnaeus: A Celebration of the Linnaean Tercentenary – A symposium initiated by ISHBH and sponsored by The Herpetologists' League

Carl Linnaeus was born on 23 May 1707 – 300 years ago. He is often called the father of taxonomy but he also made important specific contributions to herpetology through his original descriptions of numerous taxa, ecological and biological writings, publications on snake-bite and its treatment and, indirectly, through his influence on a generation of students who served as apostles of “the Linnaean system” and themselves collected and described amphibians and reptiles from around the world.

ISHBH has initiated a symposium that places the herpetological legacy of Linnaeus in focus. It will be held at the Joint Meeting of Ichthyologists and Herpetologists in St. Louis, Missouri, USA that takes place 11 to 16 July 2007, organized by three USA based herpetological societies. The Herpetologists' League is the sponsoring society of the symposium and has also contributed substantial financing. The symposium will be held on Saturday 14 July from 8 a.m. to noon.

Members of ISHBH have responded to the calls in this journal and on the website to contribute oral papers. The keynote speaker at the symposium is an invited guest, a distinguished Linnaeus scholar from Sweden, the country in which Linnaeus was born and practiced most of his life, Torbjörn Lindell. Other speakers will be Kraig Adler, Aaron M. Bauer, William E. Duellman, László Krecsák/Richard Wahlgren, Ernest A. Liner, Roy W. McDiarmid, Chuck Schaffer, John E. Simmons/Julianne Snider, and Kevin de Queiroz.

The Society will also hold its traditional shared luncheon for members and guests. A study tour to the Linnaean collection of the library of the

Missouri Botanical Garden is being planned as well. Details of these events will be posted on the Society website or announced at the meeting.

Other News

Adrian Crane library for sale

An immense collection of fine, mostly old and well-illustrated books, but also more standard priced literature and ephemera dealing with reptiles and amphibians was announced for sale on the web on December 12 last year. The sale, by the respectable trader in antiquarian and new books, Bibliomania! in Utah, USA, is that of the collection of Adrian Crane of Texas. Adrian Crane, born in 1962, assembled a library of herpetological literature over the last 18 years by dedicated collecting. The sale takes place through traditional means of a catalogue with fixed prices. The catalogue was first released as a PDF via email to existing customers and was shortly thereafter available on the website of Bibliomania. The printed catalogue, which also contains some further 2,000 items – mostly books – on herpetological matters, from Bibliomania's inventory will be published in June and can be ordered free from Breck Bartholomew [breck@herplit.com]. It contains a wealth of information on the books already sold and still available and it is profusely illustrated in color. It will become a valuable reference source and a collector's item in itself.

The release of the PDF catalogue was arranged by Bibliomania in a most exemplary manner for a book trader. It was announced to the clients of Bibliomania by postcards, emails and on the bookseller's website about a month in advance that the catalogues should be emailed on a stipulated date and time, watchfully chosen considering the time worldwide. Eventually, on December 12 those who had requested it received the email list on the minute allowing each the same opportunity to order.

Adrian Crane has written a preface providing the background to his herpetological pursuits, which included working for William Haast at his Miami Serpenterium in the summer of 1980 and starting a herpetological society in New Jersey. Kraig Adler has written the foreword. The total sale value of the books (excluding a few non-herp related books) was US\$ 360,000. Bibliomania posted a status list of what items were sold and remaining just after a month after the email catalogue was released, which by value was 50 %. Some more notable items are mentioned here, a few with comparisons of current prices on the web.

The most costly item, \$40,000, is Giorgio Jan and Ferdinando Sordelli (1860-1881) *Iconographie Générale des Ophidiens* published in Milan, Italy. Bibliomania provides a long and detailed description of the four volumes in the catalogue. It is an extremely scarce book but it took a few months before it was finally sold for use in a private library. The folio sized Joseph Fayrer (1874) *The Thanatophidia of India being a Description of the Venomous Snakes of the Indian Peninsula*..., second edition, for \$3,750 is already sold. The text was expanded in the second edition but the 31 plates, mostly colored, are the same as in the first edition published two years earlier. The first edition is

available on the web priced at \$5,000. Charles Owen (1742) *An Essay Towards a Natural History of Serpents* privately published in London is already sold by Bibliomania for \$2,000. Maximilian zu Wied-Neuwied (1865) *Verzeichniss der Reptilien, welche auf einer Reise im nördlichen America beobachtet wurden* is an original copy of the work published by Bibliomania in 2004 as a quality facsimile reprint with the seven plates hand-colored and still available for \$875. Adrian Crane's copy was priced at \$1,800 and is sold. On the web one copy is advertised for \$2,900. Still available are Heinrich Rudolf Schinz (1833–1835) *Naturgeschichte und Abbildungen der Reptilien nach den neuesten Systemen...* with 102 plates in two versions, a hand colored for \$7,500 and the uncolored for \$2,500. One plain copy is available on the web for \$1,100 but please be aware; it is faulty and also faulty described as having 70 plates of 72 (sic! 102). August Johann Roesel von Rosenhof (1758) *Historia naturalis Ranarum nostratium*, a folio with 24 hand colored plates and each with another plain key plate, is also available for \$22,000 in contemporary binding with leather spine and corners. Two copies can be found on the web, one for \$27,000 and the other for \$40,000.

Richard Wahlgren

About the cover

Temple Viper, *Tropidolaemus wagleri* Adult Male and Female Depicted by Ouwens in 1916

PATRICK DAVID, pdavid@mnhn.fr

Source: P. A. OUWENS, *De Voornaamste Giftslangen van Nederlandsch Oost-Indië, Met een verhandeling over de verschijnselen en over de behandeling van giftigen slangenbeet door Dr. G.W.Kiewiet De Jonge*. 1916, Boekhandel en Drukkerij voorheen E. J. Brill, Leiden: 1-22, (1), Pls. I-XIX (lithographs, out of which 17 are colored). Reprinted without publisher or date, circa 1990. Plate XV.

Little is known about the life of Major Peter A. OUWENS (ca. 1849 - 5 March 1922) (see Backer & Leefmans, 1922). This Dutch officer has been an assistant to the first director of the Zoological Museum in

Buitenzorg (now Bogor) for 25 years (1894-1919) and curator for over 16 years. He left the museum on July 1st, 1921 at the age of almost 72. It is unclear whether this retired officer was really employed or worked as a volunteer (C.

Klaver; H. Kurniati, pers. comm.) We were not able to trace the exact date of his birth, but as he died on March 5th, 1922 from a protracted illness, he was probably born in 1849. Major Ouwens, as he used to be called in the *Museum Zoologicum Bogoriense*, will be best remembered by herpetologists as the describer of *Varanus komodoensis* Ouwens, 1912, brought back by the Douglas Burden Expedition (Ouwens, 1912).

In 1916, P. A. Ouwens published a semi-technical overview of “the main venomous snakes of the Dutch East Indies”, namely Indonesia that was then largely a Dutch colony (see above for the complete title). This thin book, in small folio, was nearly equally divided into the text (23 pages including preliminaries) and 19 plates, of which 17 are vividly colored chromolithographs. No new taxon was described in this book but all common venomous species of Indonesia were depicted. However, the identifications were sometimes uncertain, especially in the pitvipers. This book is now much sought after and prices rise up to 1,000 US dollars for a perfect copy. A casual search on Google in December 2006 revealed a few copies for sale, ranging between 350 and 900 dollars.

Plate XV that is considered here is supposed to depict *Lachesis sumatranus* Raffles, 1822 (Fig. 22, 22a, top) and *Lachesis wagleri* Boie, 1827 (Fig. 29, bottom). Both species are still considered valid, currently known as *Parias sumatranus* (Raffles, 1822) and *Tropidolaemus wagleri* (Boie, 1827) respectively. The generic classification of Asian pitvipers formerly placed in the genus *Trimeresurus* Lacepède, 1804 is currently in state of flux. Some authors follow Malhotra & Thorpe (2004) and recognize the genus *Parias* Gray, 1849 (Sanders et al., 2004; Gumprecht et al., 2004), whereas others regard it as a subgenus of *Trimeresurus* (see Vogel, 2006).

This plate is interesting for more than one point. Firstly, it is brightly colored and depicts accurately the adult female of *Tropidolaemus wagleri* (Fig. 29). This large and beautiful pitviper is one of the commonest venomous snakes in the Sunda

Region. *Tropidolaemus wagleri* is well known for being kept in a temple on Penang Island, from which the Wagler’s pitviper draws its more popular name of “Temple pitviper”.

Tropidolaemus wagleri sensu lato has long been famous for its variation in color and pattern (see Vogel, 2006). According to the literature, in Indonesia it occurs in Sumatra, the Mentawai Archipelago, Nias, Bangka, Belitung, Butung, Karimata, the Natuna Archipelago, Borneo and Sulawesi, as well as, out of Indonesia, in Thailand, the Federation of Malaysia (West Malaysia, Sabah and Sarawak), Singapore, Brunei Darussalam, and the Philippine Islands (including Sulu Archipelago) (David & Vogel, 1996). However, this group is currently under revision. Preliminary results were summarized in Vogel (2006). The specific nomen *wagleri* should be restricted to populations of Thailand, West Malaysia and Sumatra (including Bangka). Eastern populations should currently be known as *Tropidolaemus subannulatus* (Gray, 1842), but several species are probably included under this specific nomen; our on-going revision will clarify this point. Quite strangely enough, this complex is unknown from Java, even from the wet lowlands forests of West Java.

The morph of the large specimen depicted at the bottom of Ouwens’ plate, with yellow crossbars separated by dark green or black crossbars dotted with light green or yellow, is known only in adult females from Thailand, West Malaysia and Sumatra (and Bangka), and hence represents *Tropidolaemus wagleri* sensu stricto. In contrast, adult male and juvenile specimens of these populations remain basically bright green with dorsolateral cream dots (adult and juvenile males) or crossbars (juvenile females), with a bicolor, orange and white postocular streak.

Keeping these features in minds, we arrive at the second point making this plate interesting. The snake depicted on Fig. 22 and 22a is not a *Lachesis sumatranus* (now *Parias sumatranus*) as stated by Ouwens, but indeed either a juvenile or an adult male of *Tropidolaemus wagleri*.

According to the morphology of the body, we would rather think of an adult male. *Parias hageni* (Van Lidth de Jeude, 1886) also has such pale dorsal blotches, but does not show orange postocular streaks or the strong keels on cephalic scales. So, Ouwens in fact depicted the two morphs of the same species, *Tropidolaemus wagleri*, and not the beautiful and spectacular *Parias sumatranus* (Raffles, 1822), very different in morphology, scalation and pattern. Good pictures of this quite uncommon species can be found in Gumprecht et al. (2004) and Vogel (2006).

Last but not least, Ouwens (Plate XVI, Fig. 23) intended to depict another specimen of “*Lachesis sumatranus*”. Unfortunately, this specimen is undoubtedly a *Parias hageni* (Van Lidth de Jeude, 1886). The large, diffuse white dorsal blotches and postocular streaks are typical of this species long confused with *Lachesis sumatranus* Raffles, 1822. Both species were clearly identified and separated by Brongersma (1933).

The interesting Plate XV makes clear that even an eminent naturalist working in Indonesia could confuse two strongly different pitvipers (*P. hageni* and *T. wagleri*), in spite of the paper by Van Lidth de Jeude (1886) which already clearly separated these two species. One year later, De Rooij (1917) put some order in the taxonomy of Indonesian snakes, but also failed to define *Parias hageni*, then regarded as a synonym of *Lachesis sumatranus*. Following this latter author, the taxonomy of these beautiful and medically important snakes would remain confused for many years after. De Rooij also failed to notice the geographical variation of the pattern and scalation in *Tropidolaemus wagleri*, the intraspecific taxonomy of which has never been properly investigated up to now (Vogel et al., in prep.)

The author wishes to thank O. S. G. Pauwels (Brussels) and G. Vogel (Heidelberg) for their comments on this essay, and the “Artis Bibliotheek” (Artis Library) (Amsterdam), Charles Klaver (Groningen) and Hellen Kurniati (Cibinong, Java) for their information on the biography of P. A. Ouwens.

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On the Status and Date of Publication of the Generic Name *Ptychozoon* (Reptilia, Gekkonidae)

CHARLES KLAVER

University Library, University of Groningen, P.O. Box 559,
NL 9700 AN Groningen, The Netherlands, C.J.J.Klaver@rug.nl

While preparing a biographical article about Heinrich Kuhl and Johan Coenraad van Hasselt, two promising biologists who died prematurely in the Dutch East Indies, the present Indonesia (Fransen et al., 1997: 239 & 256), I came upon a systematic problem affecting the gekkonid lizard *Ptychozoon kuhli* that still appears to be unresolved (see, for example, the EMBL database). Wermuth (1965: 154) succinctly described the unresolved problems as to the generic name *Ptychozoon*, its author and date of publication. This problem is addressed in the present paper.

I shall not even try to describe the case in my own words, but quote the relevant passage here *verbatim*:

Ptychozoon Kuhl

* 1822 *Ptychozoon* Kuhl & Hasselt (nomen validum?), Alg. Konst- en Letter-Bode, Haarlem. 1: 102 (fide Nomencl. Anim. Gen. Subgen. preuss. Akad. Wiss. Berlin, 4: 1935).

1822 *Ptychozoon* Kuhl (nomen nudum?, nomen novum pro *Ptychozoon* Kuhl & Hasselt 1822?), Isis (Oken), Jena, 1822: 475.

1826 *Ptychozoon* Kuhl in Fitzinger. Neue Classif. Rept.: 13, 47. – Species typica (durch ursprüngliche Bestimmung [= by original designation]): *Lacerta homalcephala* Crevelldt = *Ptychozoon kuhli* Stejneger.

(*) Im gleichen Jahr 1822 erscheint der Name dieser Gattung einmal als *Ptychozoon Kuhl & Hasselt*, ein andermal als *Ptychozoon Kuhl*. Als Publikationsdatum der ersten Schreibweise gilt laut Nomencl. Anim. Gen. Subgen. (Preuss. Akad. Wiss. Berlin) der 15-II-1822, während ich die genaue Zeit für die Veröffentlichung der zweiten Namensform nicht ermitteln konnte. Bedauerlicherweise war ich auch nicht in der Lage, das Zitat für *Ptychozoon Kuhl & Hasselt* im Original zu verifizieren, so dass ich über den

Status dieses Namens nichts aussagen kann. Handelt es sich – wie man nach dem Charakter der Zeitschrift annehmen möchte – um eine nicht gültige, das heisst, nicht den Nomenklatur-Gesetzen entsprechende Veröffentlichung, so kommt auch dem Namen *Ptychozoon Kuhl* 1822 kein nomenklatorischer Status zu, denn er tritt ohne dazugehörige Beschreibung oder Art auf und ist somit entweder als ein Nomen nudum oder – falls *Ptychozoon Kuhl & Hasselt* doch gültig ist – als ein Nomen substitutum hierfür aufzufassen. Sollte der zuletzt genannte Fall zutreffen und *Ptychozoon Kuhl & Hasselt* gültig sein, so wäre dieser Name gemäss den in London 1958 gefassten Beschlüssen der Internationalen Nomenklatur-Kommission als ein Nomen oblitum anzusehen, das von der Kommission zu verwerfen wäre. Bis sich diese Fragen an Hand der mir leider nicht zugänglichen Original-Literatur klären lassen, soll hier – in Übereinstimmung mit M.A. Smith 1935 (Fauna brit. Ind., Rept. Amph., 2: 117) – das Zitat *Ptychozoon Kuhl* in Fitzinger 1826, in dem auch die species typica einwandfrei festgelegt wird, als gültige Erstbeschreibung des Gattungsnamen gelten. (End of quotation from Wermuth [1965] - **Translation**: “In the same year 1822 the name of this genus is once published as *Ptychozoon Kuhl & Hasselt*, the other time as *Ptychozoon Kuhl*. According to Nomencl. Anim. Gen. Subgen. (Preuss. Akad. Wiss. Berlin) the date of publication of the first name is 15-II-1822, whereas I could not ascertain the precise date of publication of the second name. Unfortunately I was not able to verify the quotation of *Ptychozoon Kuhl & Hasselt* in the original text, so I cannot say anything about the status of this name. Does the journal concerned not conform the rules of nomenclature as to what constitutes a publication – which seems plausible in view of the character of the journal) – the name *Ptychozoon Kuhl* 1822 has no nomenclatural status either as it is mentioned without the necessary description or species and is, consequently, to be regarded as either a nomen nudum or – in case

Ptyxozoon Kuhl & Hasselt is valid after all - a nomen substitutum. Should this last possibility be the case and *Ptyxozoon* be valid, then this name would have according to the in London in 1958 formulated decisions of the International Nomenclature Commission to be considered a nomen oblitum that, according to the Commission, has to be rejected. Until these questions can be answered with the help of the original literature, that is unfortunately not at my disposal, the quotation of *Ptychozoon* Kuhl in Fitzinger 1826, in which the type species is also designated, has to be considered - in accordance with M.A. Smith 1935 [Fauna Brit. Ind., Rept. Amph., 2: 117] - the valid original description of the genus name.”).

Let me first of all dispel the doubts about the journal in which Kuhl and Van Hasselt published the name *Ptyxozoon* and correct what appears to be an erroneous authorship indication of the article in *Isis*. The “*Algemeene konst- en letterbode*” was at the time a renowned, if inconspicuous because it was published in Dutch, scientific journal in the Netherlands that fulfils all the requirements of article 8 of the International Code of Zoological Nomenclature (1999). It appeared from 1788 till 1862 (with an interruption from 1793 till 1801) and it is the legitimate source of many valid scientific names, including those of the colubrid snake genus *Homalopsis*, the amphibian genera *Megophrys*, *Occidozyga* and *Rhacophorus* as well as quite a large number of genera and species of fish and opisthobranch gastropods, all of them described by Kuhl and Van Hasselt, either alone or together (Dubois, 1982 & 1992; Klaver, in prep.). So Wermuth’s doubts as to the status of this journal, and thus about the validity of the name *Ptyxozoon*, are, at least in view of this argument, not warranted. The second name, viz. *Ptychozoon* was not, as Wermuth indicated, published by Kuhl, but by Kuhl and Hasselt (1822b). Both the title of the publication (see References) as well as the relevant passage reveal this to be the case. The passage reads on page 475: “und endlich haben wir aus einem in den Schriften d. D. Ges. N. F. in Berlin beschriebenen Thiere (wenn ich es mir recht erinnere) ein eigenes Genus *Ptychozoon*

gebildet. Diess Thier scheint für das Wasser geschaffen, lebt aber nur an den Wänden der Häuser.” (Translation: “and finally for an in the journal of the G[erman] Soc[iety] of N.F. in Berlin described animal [if I remember correctly] we have created a separate genus *Ptychozoon*. This animal appears to be aquatic, but it lives only on the walls of the houses.”)). Incidentally, Kuhl and Van Hasselt should perhaps be absolved for mistaking the webbed feet of the species as an aquatic adaptation, only later this character was found out to be an adaptation to parachuting or gliding.

The two publications by Kuhl and Van Hasselt mentioned above are only two of in total nine publications by them (either together or separately) that are concerned with amphibians and reptiles of Java, viz. Hasselt (1823a & b; 1824a, b & c), Kuhl (1824a & b) and Kuhl & Hasselt (1822a & b). Although there is an overlap in contents between the Dutch versions and the French and German translations some are, confusingly, published under different names as compared with the original ones, e.g. Kuhl & Hasselt (1822a) compared with Kuhl (1824a & b). Anyhow, five of these publications are relevant with regard to the genus name under consideration: Kuhl & Hasselt (1822a: 102) mention “*Ptyxozoon*”, Kuhl & Hasselt (1822b: 475) mention “*Ptychozoon*”, Hasselt (1823a: 361) mentions “*Psyxotoon*”, Kuhl (1824a: 82) mentions “*Ptychozoon*” and Hasselt (1824a: 372) mentions “*Psychozoon*”. So we have four different spellings of what appears to be the same concept, although the last three names have escaped the attention of Wermuth and subsequent authors and remained elusive until now. Those that were known, viz. *Ptyxozoon* Kuhl & Van Hasselt, 1822a and *Ptychozoon* Kuhl & Van Hasselt, 1822b, were *both* named without being sufficiently defined nor was the indication, i.e. a bibliographic reference to a previously published description or definition sufficiently specific (Article 12 of the Code [ICZN, 1999]). In the case of *Ptychozoon* Kuhl & Van Hasselt, 1822b, see the German quotation above; in case of *Ptyxozoon* Kuhl & Van Hasselt, 1822a the Dutch version reads: “en

eindelijk hebben wij uit een, in de schriften van het Berl. Gesel. d. N.F. in Berlijn beschreven dier; (als ik mij wel herinner), een eigen Genus Ptyxozoon gevormd. – Dit dier schijnt voor het water geschapen, maar leeft slechts aan de wanden der huizen” (**Translation:** “and finally for an in the journal of the Berl[in] Soc[iety] of N.F. in Berlin described animal [if I remember correctly] we have created a separate genus *Ptyxozoon*. This animal appears to be aquatic, but it lives only on the walls of the houses.”). This text amounts to the same thing as in the German version. We may, therefore, conclude that Wermuth was not only right in his assessment as to the invalidity *Ptychozoon* Kuhl & Van Hasselt, 1822b, but also in his inkling of the invalidity of *Ptyxozoon* Kuhl & Van Hasselt, 1822a although for an entirely different reason. Consequently, as the above passages with both names do not fulfil the requirements of a valid description as stipulated in the *Code* (ICZN, 1999), they can be considered *nomina nuda*.

Ptychozoon Kuhl in Fitzinger, 1826 is now generally considered the valid name of this genus, with *Lacerta homalocephala* Creveld, 1809 (p. 267, Plate 8) (name preoccupied; replaced by *Ptychozoon kuhli* Stejneger, 1902: 37) as the type species. Creveld’s plate is here reproduced on Fig. 1. However, we still have the other three names that have emerged to account for. Fortunately *Psyxotoon* Van Hasselt, 1823a and *Psychozoon* Van Hasselt, 1824a appear to be only inadvertent orthographic mistakes without any consequence. These names were only mentioned to compare the patagium of some new and unnamed gecko species with that of the larger *Ptychozoon*, viz. “2 species, die echter wezenlijk om de vrije uitbreiding der huid aan de zijden des lichaams ons genus *Ptyxotoon* naderen, verdienen in een eigen afdeeling te worden opgesteld.” (Hasselt, 1823a: 361 - **Translation:** “2 species that in view of the free dermal extensions on the flanks of the body resemble our genus *Ptyxotoon*, deserve to be classified in a genus of their own.”) and “...deux nouvelles *Hemidactyles* [sic] se rapproche de notre grand *Psychozoon* par la libre extension de la peau de leurs flancs.” (Hasselt, 1824a: 374 - **Translation:** “... two new

Hemidactyles [sic] resemble our large *Psychozoon* in the free dermal extension on the sides.”). The French and Dutch versions are almost the same, i.e. the Dutch version mentions, moreover, the need to classify these species in a “afdeeling” (= section or genus) of their own. Something Fitzinger (1843) was happy to comply with when he created the genus *Cosymbotus*. So it may be concluded that *Psyxotoon* Van Hasselt, 1823a and *Psychozoon* Van Hasselt, 1824a constitute *nomina nuda* as well. Should some earlier published name prove to be valid, viz. *Ptychozoon* Kuhl, 1824a (see below), then *Psychozoon* Van Hasselt, 1824a could be considered an unjustified emendation, but more probably a mere lapsus.

Which leaves us the name *Ptychozoon* Kuhl, 1824a. Kuhl (1824a: 82) stated: “...et c’est pour le singulier reptile décrit et figuré par Creveld [sic], *Berlin Magazin*, vol. III, que nous avons fait le genre *Ptychozoon*: par les appendices cutanés de son corps, cet animal paraît être destiné à vivre dans léau; cependant il vit sur les murs des maisons.” (**Translation:** “...and for the singular reptile indeed described and figured by Creveld [sic], *Berlin Magazine*, vol. 3, we created the genus *Ptychozoon*: because of the dermal extensions on its body, this animal seems to be aquatic, however it lives on the walls of the houses.”) Here, at last, we have something of substance, because in this one sentence are mentioned a genus-group name accompanied by a brief, but unambiguous description as well as an indication, i.e. a bibliographic reference to a previously published description, illustration and available specific name. In my opinion all this fulfils the requirements of a valid description as described in Article 12 of the *Code* (ICZN, 1999). Had the name in Kuhl (1824a) been different, i.e. another orthographic variant of *Ptychozoon*, then it would not have had any consequences as it would have constituted a *nomen oblitum*. But now the name is identical to the valid name (Kuhl in Fitzinger, never mind the name of the type species being preoccupied, [Stejneger, 1902]) as well as available itself the conclusion has to be that the date of publication is not 1826 (Kuhl in Fitzinger), but 1824 (Kuhl). So the proper

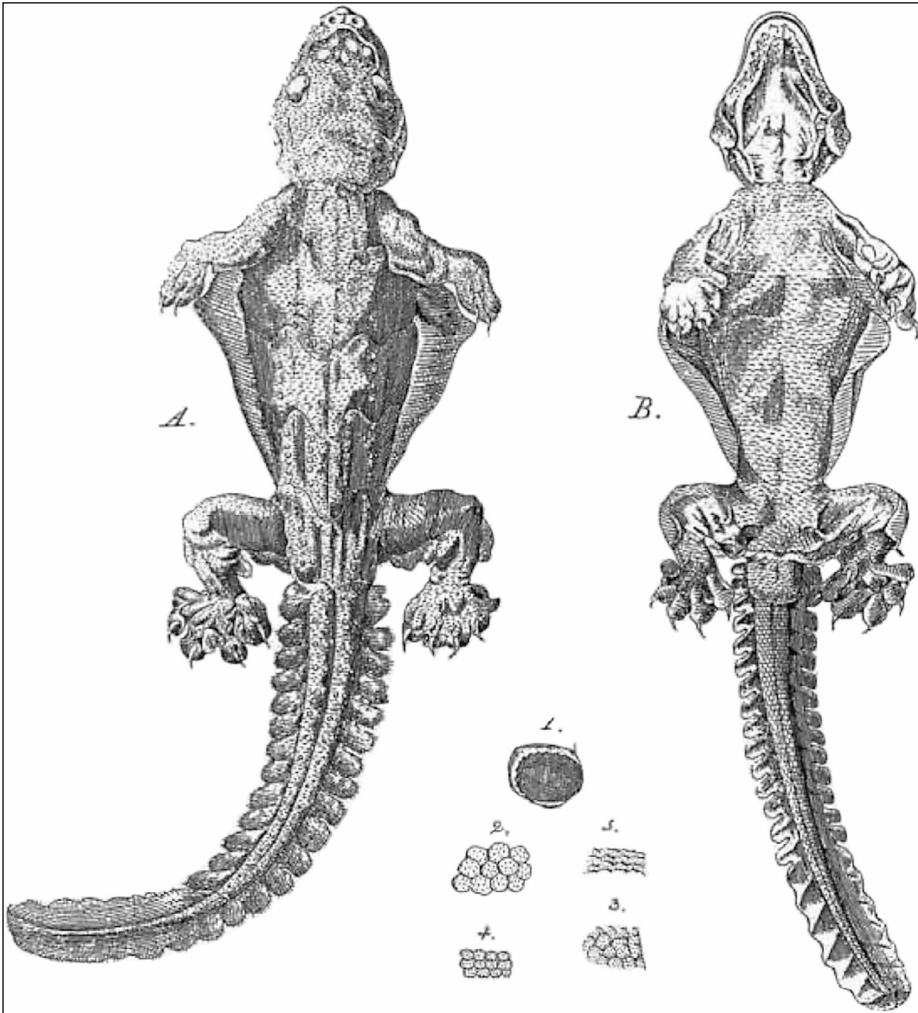


Fig. 1. Reproduction of Plate 8 of Creveld (1809), showing *Lacerta homalocephala*.

quotation of the generic name is: *Ptychozoon* Kuhl, 1824, published in Kuhl (1824a).

Acknowledgements

I like to thank Dr. L.B. Holthuis of the National Museum of Natural History, Leiden, The Netherlands for his advice in the nomenclatural matters.

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Appendix

A word of caution might be appropriate here. One of the idiosyncracies of the Dutch language relates to the treatment of surnames with a prefix. If a person with such a name, e.g. Johan Coenraad van Hasselt, is referred to by only his surname, then the prefix is included and the first letter of the prefix is written in upper case, viz. Van Hasselt. When the surname is placed in alphabetical order, however, it is done according to the first letter of the surname proper and not that of the prefix. As a rule, and indeed an internationally adopted rule for alphabetizing Dutch names of persons (International Federation of Library Associations, 1977), the name is entered in a list of references by the first letter of the surname proper, viz. Hasselt, J. C. van. It should be noted that the prefix is written in lower case again and relegated to the end of the name quotation. Consequently in the text of this paper I have referred to "Van Hasselt", as a person, by his complete surname, but publications by him are referred to as "Hasselt". They are found under this heading in the section "References".

Incidentally, it comes as a surprise, I suppose, that similar Belgian surnames with a prefix are alphabetized quite differently, i.e. according to the first letter of the prefix! No wonder that non-residents of Belgium and The Netherlands cannot make head or tail of it and Belgian and Dutch readers alike often have to grope after surnames in their (i.e. the non-Belgian/Dutch authors) published list of references.

The Versions of Cope's *Batrachia and Reptilia of Costa Rica*

ROBERT W. MURPHY¹, ARTHUR SMITH² AND ANDRE NGO³

¹Department of Natural History, Royal Ontario Museum, 100 Queen's Park,
Toronto, ON M5S 2C6, Canada, e-mail: drbob@zoo.utoronto.ca

²Library, Royal Ontario Museum, 100 Queen's Park,

Toronto, ON M5S 2C6, Canada, e-mail: arthurs@rom.on.ca

³Department of Natural History, Royal Ontario Museum, 100 Queen's Park,
Toronto, ON M5S 2C6, Canada, e-mail: andre.ngo@utoronto.ca

Introduction

One of the best known and more colourful 19th Century vertebrate zoologists, and North America's best known herpetologists, is Edward Drinker Cope. With almost 1400 published papers (Frazer, 1902), his research productivity is astounding, and remains one of the most remarkable records of achievement in the history of biology. Cope published about 170 papers on extant amphibians and reptiles (Adler, 1989). His classic work, *The Crocodilians, Lizards, and Snakes of North America*, published in (Cope 1900), remains quite useful and is sought after by every collector of herpetological literature. Fortunately, this monograph is neither rare nor particularly expensive. His monograph *The Batrachia of North America* (Cope 1889; reprinted 1963) is also a standard reference. In stark contrast, one of Cope's least known, but extremely important monographs concerns the herpetofauna of Costa Rica.

Cope's monograph *On the Batrachia and Reptilia of Costa Rica with Notes on the Herpetology and Ichthyology of Nicaragua and Peru* is a truly rare, seminal contribution to herpetological diversity. The publication is not listed under Cope in the Catalogue of Books in the British Museum (Natural History) (1903-1915, 1922-1940) or in Wood (1931), and not referenced by Haines (2000). The Zoological Record lists the monograph as appearing in the Journal of the Academy of Natural Sciences of Philadelphia in 1876. Owing to its rarity and importance, the monograph was reprinted by A. E. B. O'Bíos (Costa Rica) in an edition of 1500 copies.

Some controversy surrounds the publication date of this work. It is most frequently listed as being published in "1875 (1876)" (e.g., Frost, 2004). Whereas the more common journal version is dated 1876 on the front wrapper, an extremely rare author's "extract" is dated 1875. The controversy likely owes to the existence of multiple releases and publication dates.

Alternative versions of *On the Batrachia and Reptilia of Costa Rica*

Savage (2002) cites two journal versions of Cope's memoir, one dated 1875 and the other 1876. Indeed, there are two versions. One consists of the "letterpress" (author's preprint) issue and the other the journal issue. The two versions differ somewhat in composition and text. The more common, journal version contains all of the papers in the issue, and not just Article IV, Cope's monograph on Costa Rica. The additional papers include Article V, Cope's *On the Batrachia and Reptilia collected by Dr. John M. Bransford during the Nicaraguan Canal Survey of 1874*, Article VI, Cope's *Report on reptiles brought by Professor James Orton from the middle and upper Amazon and western Peru*, Article VII, Cope's *Note on the ichthyology of Lake Titicaca*, and Article VIII, O.A.L. Mörch's *A descriptive catalogue of the Scalidae of the West India Islands*. In contrast, the letterpress version contains Cope's monograph on Costa Rica even though the title reflects all of his contributions in this issue of the journal. Complete, the author's "extract," better referred to as a preprint, consists of two volumes issued 16 months apart; the title page of one is labeled "Extracted from the Journal of the Academy of

Natural Sciences" and the other "Atlas." The preprint, is dated "Philadelphia: 1875." In this volume, the plate caption states, "Published Nov. 26, 1875." The journal version does not specify a publication date other than "1876" on the front wrapper; the publication date on the plate caption is not present. The *Atlas* volume of Cope's letterpress version is dated "Philadelphia, April, 1877," although this may not be accurate, as noted below. Some authorities use the letterpress version to date Cope's descriptions of new species (e.g., Savage 2002), and yet most other authorities use the journal date of 1876, or the incorrect citation of the journal as "1875 (1876)."

The 1875 text volume of the author's preprint is complete with the six plates. The "Explanation of the Plates (I-VI)" refers to the plates that are actually numbered 23–28. In addition, the figures are printed on a lighter weight paper than normally used in the journal, and in the one copy we have examined, the paper in letterpress copy is acidic and now browned. This condition is also true for the copy in the library of Dr. Kraig Adler (pers. com., 2006). We have examined two copies of the 1877 letterpress *Atlas* and both are void of the "Explanation of the Plates." In both copies of the *Atlas*, a preface "Note" is of great significance as it provides specific dates of publication for the two versions:

"The letterpress of this memoir was published in an edition of fifty copies, Nov. 26, 1875. The principal edition will appear in the Journal of the Academy of Natural Sciences of Philadelphia, which has not yet been issued, in consequence of the delay in the completion of the plates. These are now published, completing the separate memoir" [dated] March 20th, 1877.

The specific date for the journal issue differs from that on the front wrapper, which states "January 1876." Given Cope's documentation, this date most likely the anticipated release of the journal issue, and not the actual

date of release because the Journal of the Academy of Natural Sciences of Philadelphia, Ser. 2, Vol. 8, Part 2 was not complete until March 20, 1877. The journal issue could not have been released in 1876, as stated on the front wrapper. The release date of April, 1877 (as stated on the *Atlas* letterpress volume) may have reflected an anticipated delay for the issue. However, the *Note* provides a specific date, March 20, 1877, which should be used. Starting with Volume 9, the Journal of the Academy of Natural Sciences gives precise dates for each author's preprint. Unfortunately, Volume 8 bears only the following caveat at the end of the list of contents: "Extra copies printed in advance for the authors."

The plates in the *Atlas* and journal issues differ from those in the preprint in three respects. First, the plates in the *Atlas* and journal are printed on heavyweight paper, unlike the preprint. Second, the three lines of caption at the bottom of Plate 23 are more widely spaced in the preprint version compared to the *Atlas* and journal versions. Third, the caption for Plate 26 is justified more to the right in the journal and *Atlas* versions, compared to the preprint. Compared to the preprint, the similarities between the journal's and *Atlas*' plates confirm that the journal issue was not released until at least March 20, 1877.

Rarity of *On the Batrachia and Reptilia of Costa Rica*...

The letterpress version was released in an edition of only 50 copies before the journal issue. Although the species descriptions in the two versions appear to be identical, except for dating of the plates, the letterpress version forms the basis for the descriptions of new species. The journal issue of 1877 (1876) is a later reprint and, given minor differences in text between the two versions, authorities should differentiate between the letterpress and journal issues. Cope's species descriptions in the monograph on Costa Rica precisely date to 26 Nov. 1875, not 1876 or 20 March 1877.

We have seen two identically bound sets of the letterpress *Atlas*. The half leather bindings have a sciber (thin leather) label on the front board (Fig. 1). The bindings of the atlases are identical to that of the 1875 letterpress preprint in terms of leather, cloth, labels, size and decorative gilding. The identical bindings of the two atlases suggest that the two volumes of the letterpress version were bound by a single binder and distributed by Cope as bound books. The identical style of the bindings could also suggest that the two volumes were not initially distributed until 1877. However, it is likely that the two volumes were issued separately. The 1875 letterpress version is sewn on cords and is a traditional “tight back” binding. The leather was glued to the back of the book. In contrast, the *Atlas* is a case binding—the pages are held in the hollow-back book by end sheets—and the plates were not sewn on cords or tape.

The extremely small edition of only 50 letterpress copies makes this one of the most rare herpetological publications. Indeed, a check of the catalogues of books in worldwide libraries locates only 23 citations. Of these, eight libraries contain the letterpress preprint only, 11 have the atlas only, and only four have the complete set, including Harvard University, The University of Michigan, The University of Maryland and The Academy of Natural Sciences of Philadelphia. Neither the letterpress preprint nor the *Atlas* is catalogued in libraries outside of the U.S.A. and Canada. One additional copy of the author’s preprint also occurs in the Museo Nacional de Costa Rica. Two additional copies of the preprint have been located in private libraries. Unfortunately, one of these is incomplete, including missing the distinctive plates and the explanation of the plates that identify the copy as being the preprint version. One additional copy of the *Atlas* also occurs in a private library.

The 1967 O’Bios reprint of Cope’s memoir on Costa Rica is a faithful reproduction of the 1875 letterpress preprint presumably taken from the copy in Museo Nacional de Costa Rica. How-

ever, the quarto reprint is reduced in size. The original letterpress preprint was printed as a folio and issued in a trimmed size of 255 mm x 330 mm (10” x 13”). The reprint measures 210mm x 265. In reprinting, the text was reduced in size by only 5%, but the plates were reduced by 25%. Three of the six lithographs were pictured in Blum (1993: figs. 6.26-8).

Citation of *On the Batrachia and Reptilia of Costa Rica*...

Cope’s 1875 advance (or preprint) edition, does not bear a statement of responsibility for the printing and publication. Its title page offers only a place of publication: Philadelphia, and the date, 1875. This stands in contrast to the 1877 (1876) version that appeared in the *Journal of the Academy of Natural Sciences*, where responsibility for the publication is clearly established as residing with the Academy. Consequently, cataloguers have not named the Academy of Natural Sciences as the body responsible for the 1875 edition, but rather, have attributed such responsibility to the author. Starting with Volume 9, the *Journal of the Academy of Natural Sciences* takes responsibility for publishing author’s preprints.

The 1875 letterpress edition has been treated as a preprint by many cataloguers. *The Chicago Manual of Style*, 15th ed. (2003) defines preprints as ‘unpublished material’ under the provisions of Rule 17.218. In adhering to this principle, Cope’s 1875 preprint should not be cited as part of the *Journal of the Academy of Natural Sciences*. Following the example of the *Manual*, the citation should read as cited below, in chronological order.

Cope, E.D. 1875. *On the Batrachia and Reptilia of Costa Rica: with notes on the herpetology and ichthyology of Nicaragua and Peru*. Philadelphia: Published by the author. Pp. 93–154, plates 23–28.

Cope, E.D. 1877. *The Batrachia and Reptilia of Costa Rica. Atlas*. Philadelphia: Published by the author. Pp. i, plates 23–28.

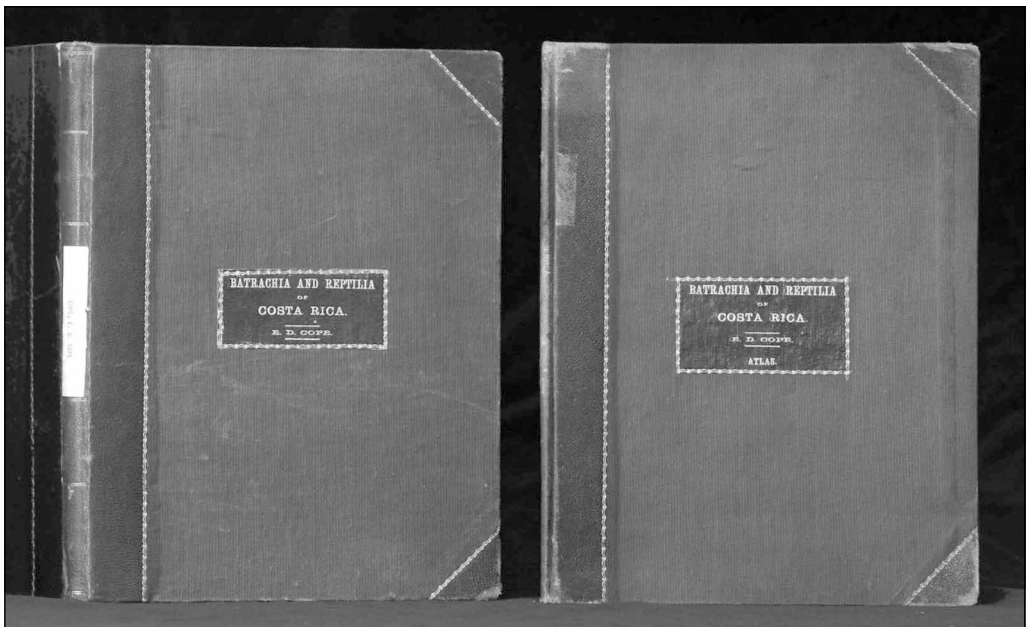


Fig. 1. The two preprint volumes of Cope's *The Batrachia and Reptilia of Costa Rica*. The "extract" was published in 1875 and the Atlas was issued in 1877.

Cope, E.D. 1877. On the Batrachia and Reptilia of Costa Rica. *Journal of the Academy of Natural Sciences of Philadelphia*. Ser. 2, 8 (2) (1876):93–154, plates 23–28.

[Note: The citation notes the year of publication as 1876 as it appears on the Journal, to enable its retrieval from libraries and databases.]

Cope, E.D. [1875] 1967. *On the Batrachia and Reptilia of Costa Rica*. A facsimile of the first ed. San José, Costa Rica: A. E. B. O'Bíos. Pp. 1–72, plates 23–28, (1).

Status of the new taxa described in *On the Batrachia and Reptilia of Costa Rica...*

Although the title of Cope (1875) states that the monograph deals with the herpetology and ichthyology of Peru and Nicaragua, it does not. The preprint contained the first of four papers by Cope that were published in the journal version. In the preprint, Cope described 37 new species, and four new genera. In the reprint, Villa (1967) notes that 36 of the 46 new species described by Cope were still recognized, including *Basiliscus plumifrons*. Today, 25 of 37

new species described by Cope in this publication are still recognized. In comparison, all of the four new genera described by Cope have been placed in synonymy.

Acknowledgments

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The Birth and Infancy of Herpetology. Part 1. From Aristotle to Linnaeus

JEAN LESCURE AND PATRICK DAVID

Département Systématique et Evolution, USM 602 Taxonomie-collection - Reptiles & Amphibiens,
C.P. 30, Muséum National d'Histoire Naturelle, 57 rue Cuvier, F-75231 Paris Cedex 05, France.
lescore@mnhn.fr, pdavid@mnhn.fr

INTRODUCTION

Herpetology is the science that studies reptiles and amphibians. How and why did naturalists of the past erect classes of reptiles and amphibians? Replying to these questions is, to summarize, to ask another question: how was herpetology born? In the present paper, we try to describe the early days and the infancy of this science.

This first part deals with the period extending from Aristotle to Linnaeus and the foundation of herpetology as a science.

THE HISTORY

In Antiquity: Aristotle (384–322 BC)

At the beginning of the herpetology was... Aristotle. Nevertheless, Aristotle was not a taxonomist. His famous opus, “History of animals” (Aristote, no date; see also Camus, 1783) was not a treatise on animal systematics. He did not elaborate a classification of animals. By his studies, comparisons, definitions and diagnoses, even as erroneous they may have been, he nevertheless undoubtedly laid the bases of what would, centuries later, become zoology.

Aristotle was above all a comparator. In order to avoid any useless repetition, he had not intention to describe species in details. Aristotle’s purpose was to compare the different genera that he recognized, their organization and internal structures (the so called “Parts”), as well as their functions. In so doing, he studied their purposes and origins. He can truly be considered the founder of both comparative anatomy and physiology.

Aristotle was against classifying the animals for reason of principality. He was opposed to classification schemes on the basis of the platonic dichotomist division. Aristotle regarded such a division as leading to unlikelihood and absurdities. On the subject of dividing animals between “terrestrial” and “aquatic”, with birds split in each division, he claimed: “One should not separate the animals of a same *genus*”. Aristotle based his findings above all on concrete characters and on the “natural essence” of genera that should be recognized by everybody: the birds, the fishes, and so on. These genera are distinguished by their architecture and the species more or some less by their “physical” characters. Nonetheless, Aristotle accepted a single major division between “Animals that have blood”, and “Animals that do not have blood”. He organized the scheme of his book and his comparisons on the basis of these two divisions.

Aristotle defined the natural genera this way:

“Here are the large genera in which various species are included. Firstly, the genus of Birds; that of Fishes, that of Cetaceans: the Animals that have blood. Then, those that are enclosed in a hard shell and these we call Shell-fishes. Regarding those in which the shell is softer, as found in spiny lobsters, crabs and fresh-water crayfishes, the common use has not generated a general universal name under which all these species are included. However, softer species, such as the cuttlefish, and the greater and the lesser squids are gathered under the general name of Molluscs. The name of Insects is also generic. The common character of these four genera is to not have blood and to have more than four legs, or to have none. We will not find any generic name for other Animals”.

Aristotle persisted in stating:

“if one gave up the idea of considering a dichotomous scheme, it then becomes possible to have recourse to several criteria of division, each being independent from others. However, as there is no logical relationship between them, the order in which they will be placed will be arbitrary. If we divide the Animals in such a way, in this large Aggregate we will eventually recognize unnamed, ‘anonymous’, genera next to named and natural genera. The former are nevertheless as much natural and justified as the latter ones, and their unity, firmly established, should never be broken.”

What are these unnamed genera? Following Aristotle, “They are the Oviparous quadrupeds and the Viviparous quadrupeds, because in each of them, the same organs were present. The Viviparous Animals are haired or hairless, but all haired animals are viviparous.” This last sentence is typical of the reasoning method of Aristotle, with his implacable logic that will be later adopted by the Scholastic school during the Middle Age.

“All Oviparous quadrupeds and Viviparous quadrupeds equally possess a head, a neck, and a back; we also recognize in their body a side facing towards the sky and another one facing towards the ground; they have front legs and hind legs, and a part corresponding to the breast. These Animals also have a tail, usually very long, whereas only a few have it short; all are fissipeds and have several fingers.”

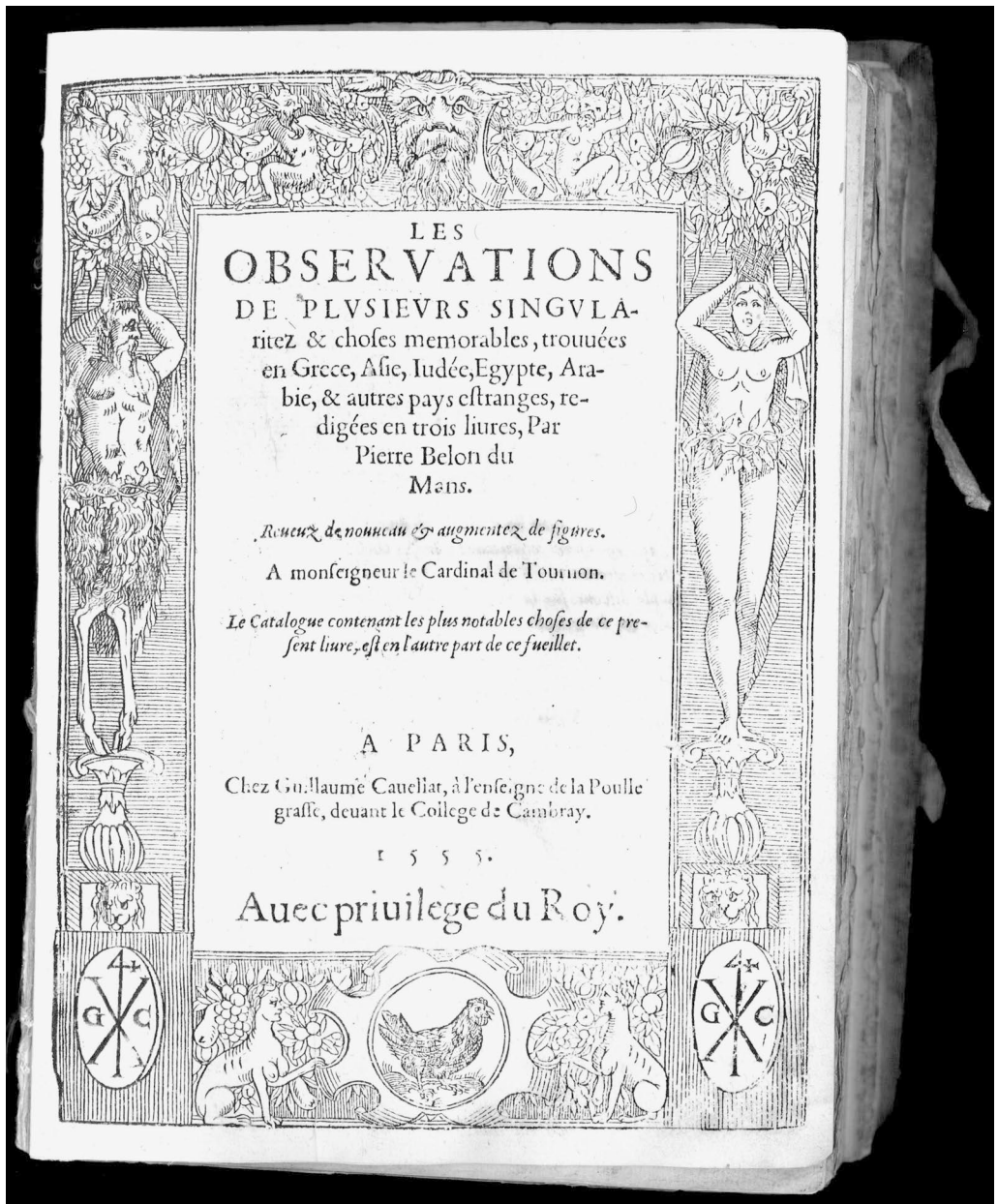
Aristotle placed in the oviparous quadrupeds: “the Sea Turtles and the Tortoises, the Lizards, the two Crocodiles, and generally all other similar animals, such as the Chameleon”. The snakes constituted an isolated genus, like the camel, the elephant, the hippopotamus and Man (Zucker, 2005). Aristotle wrote: “The Snakes, if we want to compare them with Oviparous Animals that have legs, can be placed close to the Lizards. They are similar to them in almost all characters, at the conditions of giving more

length to lizards and in removing their legs. Lizards and Snakes are covered with scales.” Aristotle could not be more correct. Based on the fossil record we now know that the most ancient snakes showed legs. “Snakes are oviparous, but the vipers are viviparous. However the vipers, like the selacians among fishes, are in fact oviparous inside their body.”

As far as amphibians are concerned, Aristotle did not write much on them, and certainly much less than on the true reptiles. Inhabiting a Mediterranean country, he had a limited knowledge of these animals. He did not say anything about amphibian reproduction in his “Treatise of the animals generation”. He hardly wrote anything about them in his “History of animals”. Aristotle just mentioned in the First book that the frogs live in the marshes and in the Third book: “Oviparous Quadrupeds, the Tortoise, the Lizard, the Frogs and others of this species have a womb identical to Birds”. In the Eighth book, he reported about “The different species of Frogs in the aquatic animals” and “the genus of Frogs” in the amphibious animals. He was aware of a gilled larva of a species of newts and salamanders, but he failed to mention the most characteristic of life history characters in amphibians, namely their metamorphosis (K. Adler, pers. com.)

From Aristotle to Linnaeus

The compilers and scholars of the Roman epoch, such as Pliny the Elder (23-79 AD), who produced a “Natural History” in 160 volumes, of the Middle Ages and Renaissance used again the divisions created by Aristotle without bringing to light anything new. The authority of the Ancients was sovereign and indisputable. However, the discovery of America entirely upset this scheme. The world of the Ancients broke away and books were no longer sufficient. Tireless travellers such as Belon, who wanted to see “through their own eye” (“à l’oeil voir”) began to describe surprising plants and animals.



Title page of Pierre Belon's "Les Observations de plusieurs singularitez et choses memorables..." (second ed. 1555).

During the Renaissance, three men, clever observers, stood out from the field of the mere compilers. Guillaume Rondelet (1507-1556), professor at the University of Montpellier in southern France, friend of Rabelais who nicknamed him *Rondilibus* in his novel "Pantagruel". By his *Libri de Piscibus marinis* (1554-1555),

he is a forerunner in the discipline of ichthyology. His book included the first description and figure of the leatherback sea turtle. Pierre Belon (1517-1564) of Le Mans (France) travelled for three years in the Near East and became professor at the *Collège de France*. He touched on several herpetological subjects in his travel

account: *Les observations de plusieurs singularitez...* (1553). Belon was also the author of one of the first books [Treatises] of ornithology. In this work, he classified the birds on the basis of the shape of their beaks and legs. Conrad Gessner (1516-1565), of Zurich (Switzerland), considered by Tournefort to be the father of Natural history, wrote a work of both erudition and observation, published from 1551 a large encyclopaedia in five volumes under the title *Historia Animalium*. The fifth volume entirely on snakes was published posthumously in 1587.

Naturalists ask themselves a basic question: in which order they must rank the increasing number of plants and animals to be described? After Dioscoride, plants were often classified according to their use: venomous, edible, purgative, etc. Others classified plants and animals in alphabetic order, but for the latter in the large divisions of Aristotle. Gessner (1551-1558) acknowledged (1587) that it is a grammatical order not a philosophic order, or as we would say today, a scientific order.

At the end of the 16th century, we can already begin to discern the premises of the idea that all living beings should be placed in a series of units fitting together and arranged in a strict hierarchy. This is one of the main purposes of Natural History.

Botany progressed, especially after the invention of the herbarium, probably by Luca Ghini (1496-1556). It was stimulated by the necessary study of medicinal plants, and, furthermore, because the natural families of plants are easier to distinguish. The classification of plants preceded the classification of animals by more than two centuries! Nevertheless, early classification schemes were based on characters from only one part of the plant, or those methods that took characters from several parts of the plant but arranged them arbitrarily according to the searcher's opinion. In short all these essays towards a classification of plants were more or less artificial and eventually failed. Everyone

hoped some day to develop a natural method that would take into account all the affinities.

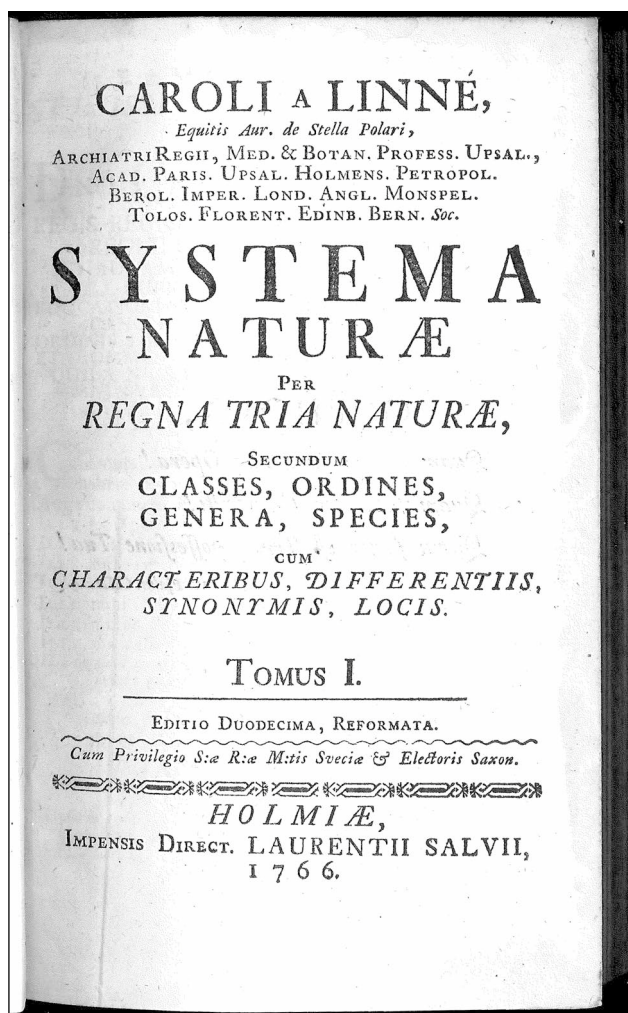
John Ray (1627-1705) approached zoological studies and published an essay on a classification of reptiles (Ray, 1693). The necessity of such a classification increased even more when the fashion of cabinets of curiosities, public or private, grew larger and larger, and, furthermore, the owners of collections began to publish catalogues of their collections. The most famous of them was held by Albertus Seba (1666-1735), a wealthy tradesman of Amsterdam, who published a catalogue of his collection, illustrated with 449 plates, under the title "*Locupletissimi Rerum Naturalium Thesauri...*" (1734-1765). Many species, especially of amphibians and reptiles, will subsequently be described from the specimens depicted on Seba's plates.

Then appeared Linnaeus...

Linnaeus (1707-1778)

Carolus Linnaeus was above all a botanist and a systematist. He affirmed the absolute permanency of the species, but this point is secondary with regard to his affirmation of the reality and fixity of the genera, the basis of his botanic classification. The genus is a collection of real species. Each natural genus "was created as such since the origin" by God. Linnaeus was a fervent Lutheran, and the Bible was the highest magisterium. We will find again this way of thinking in Cuvier, also a Protestant, nephew of a preacher.

Linnaeus wanted to eliminate all arbitrary criteria and doubts in the determination of his categories. He wanted to establish a doctrine and affirmed: "There are in Nature as many different genera as geometrical figures found in the parts of the fructification [flower + fruit]". Thus, there is no longer anything uncertain in the determination of the main genera. Each genus is characterised only by the four parts of the fructification (number, figure, proportion, position). Because of this rigorous principle,



Title page of Linnaeus (1766).

Linnaeus defined only four categories in the classification: the class, the order, the genus and the species, to which he added the variety. The distribution in class, order and genus had for Linnaeus a greater scientific value than the arrangement in species and varieties. His classification was essentially grouping genera in orders and classes.

Linnaeus was not only a systematist but also the founder of the binominal nomenclature. One of his brilliant ideas was to name his genera, the true basis of all his classification, by a binomen that definitely bound the species to its genus.

The first edition of Linnaeus' *Systema Naturae* was published in 1735, the tenth in 1758, the twelfth in 1766 and the thirteenth and last in 1789, written and completed by Johann Friedrich Gmelin (1748-1804). The tenth edition of 1758 was fixed as the starting point of official zoological nomenclature.

Linnaeus recognized three realms in Nature, namely mineral, vegetable and animal realms. He distributed the animals into six classes: *Mammalia*, *Aves*, *Amphibia*, *Pisces*, *Insecta*, and *Vermes*. He did not follow the distinction between the viviparous and oviparous quadrupeds of Aristotle and his followers. He gathered Man, the bats, the viviparous quadrupeds and above all the cetaceans (he was the first to understand the nature of these animals) to define the mammals. In so doing, he is indeed the founder of mammalogy.

In his *Systema Naturae*, Linnaeus (1758) created the third class, *Amphibia*, characterized by an aquatic and aerial way of life with a pulmonary breath. He divided it into three orders: *Reptiles* (or oviparous quadrupeds), *Serpentes* and *Nantes*, which included fishes in which the air-bladder should be a lung according to an erroneous observation of Dr. Garden. His *Reptiles* included the following genera: *Testudo*, *Draco*, and *Lacerta*, that, besides the true lizards, includes some skinks, the crocodiles, newts and salamanders, and *Rana*, which contains only anuran species. His *Serpentes* included the following genera: *Crotalus*, *Boa*, *Coluber*, *Anguis*, *Amphisbaena*, and *Coecilia*. They therefore also included some non-ophidians, aped or biped animals currently placed in the Scincidae, Anguidae, Amphisbenians and Cecilians. In the *addenda*

to the twelfth edition (Linnaeus, 1766), he proposed a fourth order for the *Amphibia*: the *Meantes*, to accommodate *Siren lacertina*, an animal with persistent external gills, originating from Carolina (United States).

According to Duméril & Bibron (1834), Linnaeus was the first to have placed *Reptiles* and *Serpentes* under a single category, the *Amphibia*.

The Contemporaries of Linnaeus and the subsequent Naturalists

How did the contemporaries of Linnaeus who also were dealing with these animals react to his *Systema Naturae*?

Jacob Theodor Klein (1685-1759) of Danzig (now Gdansk, in Poland) had an important cabinet of natural history, in which objects were properly deposited and classified. He became an opponent of Linnaeus and tried to compete with the famous Swedish author. He published in 1755 a "*Tentamen Herpetologiae*". From this title, Klein became the creator of the word Herpetology. "*Herpetata sunt animalia apoda, corpore elongate, quod volutum et flexuose loco malium movetur et sinuosum quiescit*". The *Herpetata*, that include legless crawling animals, are divided into two orders: *Anguis*, which accommodates all the snakes and "*Reptiles*" without legs, and *Vermes*, which includes all worms (*Lumbricus*, *Taenia*, *Hirudo*).

Josephus Nicolas Laurenti (1735-1805) published in Vienna in 1768 his thesis of medicine of venomous reptiles, entitled "*Specimen medicum, exhibens synopsis reptilium emendatam cum experimentis circa venena et antidota reptilium austriacorum*". The first part of his book is a review of amphibians and

TENTAMEN HERPETOLOGIAE;

A U T O R E

JACOBO THEODORO KLEIN.

C U M

PERPETUO COMMENTARIO.

Accessit J. A. UNZERI OBSERVATIO DE TAENIIS

Latine reddita, cum DUBIIS CIRCA EANDEM.

Belluam vidi pedibus carentem,
Qua suos gressu ceteri ad recessus
Pestis se confert; modo qualis hoc sit
Dixi mihi quae!
Dic! quibus terris animans alatur,
Cui procul vultu favent per annos
Aura vitalis; juvenescat immo
Pelle levata.

LEIDAE & GOTTINGAE,

Apud ELIAM LUZAC, JUN.

MDCCLV.

Title page of Klein (1755).

reptiles of the world, but he did not include tortoises. The second part described the results of his experiments to identify the venomous reptiles of Austria. He redefined the third class of Linnaeus but gave this class the name of *Reptilia* instead of *Amphibia*. It was divided into three orders: *Salientia*, *Gradientia* and *Serpentes*. In the *Salientia* or "jumpers", Laurenti placed all the anurans, in the *Gradientia* or "walkers", he mixed the genera of *Urodela*, *Triton* and *Salamandra*, with the genera of lizards and crocodiles. Lastly, in the *Serpentes*, he grouped the true snakes with *Chalcides*, *Caecilia*, *Amphisbaena* and *Anguis*. Laurenti increased heavily, and with good reason, the number of recognized genera, namely 35 instead of only nine by Linnaeus. Laurenti can be considered the first herpetologist of the modern era.

Peter Simon Pallas (1741-1811), in a publication of 1769, did not want to separate the Branchiostega (the gills carriers) from the class of fishes. He went on in placing the muraenas and the lampreys along with the snakes.

However, most of the zoologists, such as Scopoli (1777), a student of Linnaeus, Blumenbach (1779), Hermann (1783), Batsch (1788) recognized the new class of Linnaeus between the birds and the fishes but, with the exception of Scopoli and Blumenbach, removed from it the *Nantes*, fishes then wrongly considered to have a pulmonary breath. Gmelin (1789) will eventually correct this mistake in the thirteenth edition of *Systema Naturae*. These authors did not add other modifications. Scopoli (1777) merely divided the *Reptiles* sensu Linnaeus into those having a tail (*Caudata*) and those without tail (*Ecaudata*). Hermann (1783) of Strasbourg suggested that the salamanders might represent a peculiar genus, distinct from the lizards, but he did not change his classification in this sense.

However, some zoologists, especially in France, did not accept the use of the class name *Amphibia*. As Duméril & Bibron (1834) explained it much later, only a few of the species included in this class are able to live constantly or successively in or out of water, and none of them benefits constantly and simultaneously during its life from these two ways of breathing. Hermann (1783) replaced *Amphibia* by *Kryerozoa* (cold, livid, disgusting animals), a name difficult to pronounce and that, fortunately, was not adopted because it would propagate some false ideas about these animals, as rightly stated by Duméril & Bibron (1834).

Lyonet (in Lesser 1745), then Brisson (1756), proposed the French name of “Reptiles”. However, they stated clearly that they used this name only because they could not find the more appropriate name that they would have wished and that would have better characterized the species gathered together under this category. Brisson (1756), then director of the “Cabinet d’histoire naturelle de Réaumur”, divided the

Animal Kingdom in nine classes: the Quadrupeds, the Cetaceans, the Birds, the Reptiles, the cartilaginous Fishes, the true Fishes, the Crustaceans, the Insects, and the Worms. He did not have the insight of Linnaeus for the mammals. Considering the fourth class, he claimed: “All animals of this class crawl; this is why I gave them the name of Reptiles”. He specified that this name could be applied “without restriction to all the animals that move on their venter, either due to the lack of legs like the snakes, or because the legs are very short, like the lizards and tortoises.”

The most famous contemporary of Linnaeus was Buffon (1707-1788), the Intendant (Curator) of the “Jardin du Roi” (King’s Garden) in Paris. In Europe, he was then as famous as Linnaeus, and in France, he was the Master. The coexistence, even though remote, between these two scientists would prove to be contentious. Their two concepts of Natural history, two methods and two styles were in opposition. In 1749, in his first dissertation about the “*Histoire naturelle, générale et particulière, avec la description du Cabinet du Roi*” (General and peculiar Natural history, with description of the Cabinet of the King), Buffon threw his first criticisms. According to him, the knowledge of Nature stems above all from the observation of samples of all that inhabits the universe, and as a consequence, man ought to “see much and see again and often”, without any preliminary concept of any system. There was then already a great number of known species, and the mere idea to classify them in a general system scared Buffon. Considering the “Animal Kingdom” of Linnaeus, Buffon thought that his six classes were too few and that some general morphological characters, such as the presence or not of teats, were not fully appropriate (Duris, 1983). Buffon went on to say: “One must really have the mania to create classes for placing together so different creatures as Man and the three-toed sloth, or the monkey and the scaly lizard”. We must admit that there is some gratuitous criticism in our famous naturalist’s words, because the monkey and the lizard were already placed

into two different classes in Linnaeus (1758). Then Buffon went on further when he criticised the nomenclature of the Swedish scientist: "Would not it be easier, more natural and more true to state that a donkey is a donkey, and a cat is a cat rather than wanting, without knowing why, to make a donkey a horse and a cat a lynx?" With regard to style, we know the importance that Buffon accorded to it. He is the author of the famous motto known, at least formerly, by all pupils in France, "*Le style, c'est l'homme*" (the style is the man). Buffon, undoubtedly one of the most famous French writers of the 18th century, could not be satisfied with the dryness of the Linnaean style, with his economy in the words which he thought were detrimental to clarity and precision, whereas Buffon himself described objects in the most exact possible way, "with nobleness in the expression, choice and property in the terms" so that "everyone can read it without boredom as well as without exertion".

As is true in France, all matters turn to politics and everything ends in songs... In 1789, younger naturalists, followers of the new ideas of the time, become enthusiastic Linnaeans, praising the glory of Linnaeus while they saw in the Earl of Buffon an icon of the "*Ancien Régime*" and the despotic "Intendant" of the King's Garden. As a logical achievement, a bust of Linnaeus was inaugurated during the evening of the 23 August 1790, in the presence of a large audience in what was still the King's Garden, under the cedar planted by Bernard de Jussieu (1699-1777), with speeches, songs, firecrackers and honoured by the presence of elegant ladies in their beautiful dresses.

From all of these controversies and passions, the Linnaean movement in France contributed strongly to the adoption of the binominal nomenclature in this country, especially in the Museum d'Histoire Naturelle of Paris, then one of the last bastions of the resistance against the Linnaean nomenclature.

The Count of Lacepède (1756-1825) was a disciple of Buffon and was entitled to carry on his work. He followed the method of his master, imitated his style, adopted more or less loosely the Linnaean nomenclature, but did not accept his classification and returned to the divisions of Aristotle. As Buffon's "*Histoire naturelle, générale et particulière*" treated only of the Mammals and Birds, de Lacepède continued the work in writing a "*Histoire naturelle des Quadrupèdes ovipares*" (1788) and "*Histoire naturelle des Serpens*" (1789; Natural History of oviparous Quadrupeds and Natural History of Snakes). He distinguished the tailed Oviparous quadrupeds (tortoises, lizards and salamanders) from tailless Oviparous quadrupeds (frogs, tree-frogs, toads) and from the biped reptiles that included the grooved *Bipes* with its two front legs and the Scheltopusik with its "two small back legs", that, in fact, are highly vestigial legs. In addition to the true ophidians, de Lacepède's "Snakes" (aped or apod) included the Anguians, Amphisbaenians and Caecilians. The novelty of Lacepède was the removal of bipeds from the snake category, and the use of the numbers and, especially, of the shape of the dorsal and cephalic scales to identify the Snakes. "*C'est principalement en réunissant les caractères tirées de la forme, du nombre et de la position de ces écailles, que nous avons pu parvenir à distinguer non seulement les genres, mais encore les espèces de Serpens*" (Lacepède, 1789: 5), namely: "We largely relied upon characters drawn from the shape, the number and the position of these scales for being able to distinguish not only the genera, but also the species of Serpens". If Linnaeus (1758) indeed gave numbers of ventral and subcaudal scales, de Lacepède was the first author to use them, along with other scalation characters, in a taxonomic way.

Before de Lacepède (1788, 1789), Daubenton (1784) had written a volume on reptiles and amphibians in the so called Panckouke's "*Encyclopédie Méthodique*", which was entitled "*Encyclopédie méthodique. Histoire naturelle des Animaux. Les Animaux*

quadrupèdes ovipares et les serpents". It was a mere compilation without original research, which did not follow the Latin binominal nomenclature. Then, in the same methodical encyclopaedia of Panckouke, Abbé (Abbott) Pierre Joseph Bonnaterre (1752-1804) published, under the general title of "Tableau encyclopédique et méthodique de la Nature" (encyclopaedic and methodical table of Nature), a "Cétologie" and an "Erpétologie" in 1789, and an "Ophiologie" in 1790. These works were more syntheses of the knowledge of the time rather than compilations. In spite of their coverage, Bonnaterre would never be considered a herpetologist; he will not be cited by Duméril & Bibron (1834). However, Bonnaterre is the creator of the French word "Erpétologie". He also consistently adopted the Latin binominal nomenclature of Linnaeus. When de Lacépède's work, and hence most of his snake specific names were invalidated by the International Commission of Zoological Nomenclature (Anonym, 1987), Bonnaterre's names became in many instances the first valid name.

The "*Historiae Amphibiorum naturalis et litterariae*" (1799 and 1801) of Johann Gottlob Schneider (1750-1822) is a work of much greater importance. This author, philologist and herpetologist, did not deal with chelonians, described in a previous book. In the "*Historiae Amphibiorum*", Schneider profusely cited Lacépède, accepted Linnaeus's names for the class but not for the orders, recognized Linnaeus's genera but arranged them according to a different scheme and created several new orders. His first volume (1799) regroups the genera *Salamandra* (the first genus of Lizards), the "*Ranas, Calamitas (= Hylas) et Bufones*" and *Hydrus*, which accommodates the aquatic snakes. His second volume (1801) includes the genera *Crocodylus*, *Scincus*, *Chamaesaura*, *Boa*, *Pseudoboa*, *Elaps*, *Anguis*, *Amphisbaena* and *Caecilia*.

George Shaw (1751-1813) wrote "General Zoology". The Volume III (1802) dealt with the class Amphibia *sensu* Linnaeus. It was divided

into *Testudines*, *Ranae*, *Lacertae* and *Serpentes*. He often cited Lacépède (1788, 1789) and removed the Chalcides and the Bipedes from the Snakes to place them in the Lizards.

At the turning of the 19th century, all modern reptiles were still included in the single class defined by Linnaeus. If Aristotle, a comparativist and not a taxonomist, founded zoology and physiology, Linnaeus established the basis of a sound classification of the living world. He recognized a single class *Amphibia*, in which were included all vertebrates that were not fishes, birds or mammals. However, and perhaps most important, Linnaeus set the basis for a zoological nomenclature, a decisive progress that was not understood by Buffon, one of the most prominent zoologists of all times. However, Linnaeus's classification was both incomplete and artificial. As the 19th century just began, a new name, Alexandre Brongniart (1770-1847), and another era of zoology were to emerge together with the first "natural classification" and the recognition of the "Reptiles" as a class of their own...

Acknowledgements

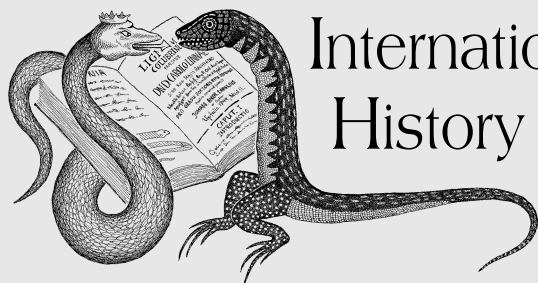
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